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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,929	09/23/2003	Katsumasa Yoshii	9281-4666	3347

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EXAMINER	
NGUYEN, HOAN C	

ART UNIT	PAPER NUMBER
2871	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/668,929	YOSHII ET AL.	
	Examiner	Art Unit	
	HOAN C. NGUYEN	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-31* is/are pending in the application.

4a) Of the above claim(s) *19,20,22,23 and 26-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17,18,21,24,25 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's arguments with respect to amended claim 17 and new claim 31 based on the Response filed on 04/19/2007 have been considered but are moot in view of the new ground(s) of rejection. Therefore, this is Final action.

Claims 19-20, 22-23 and 26-30 are withdrawn. Claims 17-18, 21-22, 24-25 and new claim 31 are elected claimed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 17-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuda et al. (US6097458A).

Claim 17:

Tsuda et al. teach (Figs. 9-14) a liquid crystal display device comprising

- a reflector 14 having a plurality of light reflective concave portions arranged randomly adjacent to each other on a surface of a base material of the reflector 14,

- each said light concave reflective portion having a single minimal point and a curved surface with a maximum inclination angle at one side portion, disposed opposite to an observer, where the side portion having the maximum inclination angle at same side of each the light reflective concave portion as Fig. 9F shown, thereof so that the one side portion has a larger reflectance magnitude than an opposing side portion as Fig. 9F shown, and
- a light reflectance peak at a predetermined angle in accordance with a location of the maximum inclination angle, and that opposes a viewpoint of the observer.

Wherein

- the plurality of the concave portions are formed continuously to each other and are arranged irregularly adjacent to each other (see attachment).

Claim 18:

- the base material (aluminum) is reflective, thereby forming a reflective liquid crystal display device.

2. Claims 17-18 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by **Hayashi et al. (US6204903B1)**.

Claim 17:

Hayashi et al. teach (Fig. 4) a liquid crystal display device comprising

- a reflector having a plurality of light reflective concave portions arranged randomly adjacent to each other on a surface of a base material of the reflector,

- each said light concave reflective portion having a single minimal point and a curved surface with a maximum inclination angle at one side portion, disposed opposite to an observer, where the side portion having the maximum inclination angle at same side of each the light reflective concave portion as Fig. 4 shown, thereof so that the one side portion has a larger reflectance magnitude than an opposing side portion, and
- a light reflectance peak at a predetermined angle in accordance with a location of the maximum inclination angle, and that opposes a viewpoint of the observer.

Wherein

- the plurality of the concave portions are formed continuously to each other and are arranged irregularly adjacent to each other.

Claim 18:

- the base material (aluminum) is reflective, thereby forming a reflective liquid crystal display device.

Claim 24:

- the light reflective concave portions, wherein the maximum inclination angle is in a range of 2.5-45° (col. 4 lines 63-65) that covers the range of 4° to 35°.

3. Claims 17-18 are rejected under 35 U.S.C. 102(b) as being anticipated by **Yamanaka et al. (US6452653B1)**.

Claim 17:

Yamanaka et al. teach (Fig. 1) a liquid crystal display device comprising

- a reflector having a plurality of light reflective concave portions arranged randomly adjacent to each other on a surface of a base material of the reflector,
- each said light concave reflective portion having a single minimal point and a curved surface with a maximum inclination angle at one side portion, disposed opposite to an observer, where the side portion having the maximum inclination angle at same side of each the light reflective concave portion as Fig. 1 shown, thereof so that the one side portion has a larger reflectance magnitude than an opposing side portion, and
- a light reflectance peak at a predetermined angle in accordance with a location of the maximum inclination angle, and that opposes a viewpoint of the observer.

Wherein

- the plurality of the concave portions are formed continuously to each other and are arranged irregularly adjacent to each other.

Claim 18:

- the base material (aluminum) is reflective, thereby forming a reflective liquid crystal display device.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 17, 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. (US6130736A) in view of Tsuda et al. (US6097458A).

In regard to claim 21, Sasaki et al. teach (Figs. 1 and 4) a liquid crystal display device comprising:

- a pair of substrates 1/2,
- a liquid crystal layer 3 disposed between the substrates,
- the reflector 14 disposed on one of the substrates,
- a transparent intervening layer (a first overcoat layer 17a) disposed on the reflector,
- a color filter layer 16 disposed on the transparent intervening layer,
- a transparent planarization layer (a second overcoat layer 17b) disposed on the color filter layer,
- a transparent electrode (9 made of ITO (indium-tin-oxide)) disposed on the transparent planarization layer,
- an alignment layer (an orientation film 11) disposed between the transparent electrode and the liquid crystal layer.
- a reflector having light reflective concave portions

wherein

Claim 25:

- the depth of the light reflective concave portions is in a range of 0.1 to 3 μm (col. 9 lines 33-35).

However, Sasaki et al. fail to teach the reflector with feature in claims 17.

Tsuda et al. teach (Fig. 1A-B and 4) the reflector with feature in claim 17 for reflecting light incident thereon toward particular direction (col. 3 lines 64-65).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a reflection type liquid crystal display device as Sasaki et al. with the reflector with feature in claim 17 for reflecting light incident thereon toward particular direction as taught by Tsuda et al. (col. 3 lines 64-65).

5. Claims 17, 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. (US6130736A) in view of **Hayashi et al. (US6204903B1)**.

In regard to claim 21, Sasaki et al. teach (Figs. 1 and 4) a liquid crystal display device comprising:

- a pair of substrates 1/2,
- a liquid crystal layer 3 disposed between the substrates,
- the reflector 14 disposed on one of the substrates,
- a transparent intervening layer (a first overcoat layer 17a) disposed on the reflector,
- a color filter layer 16 disposed on the transparent intervening layer,
- a transparent planarization layer (a second overcoat layer 17b) disposed on the color filter layer,

- a transparent electrode (9 made of ITO (indium-tin-oxide)) disposed on the transparent planarization layer,
- an alignment layer (an orientation film 11) disposed between the transparent electrode and the liquid crystal layer.
- a reflector having light reflective concave portions

wherein

Claim 25:

- the depth of the light reflective concave portions is in a range of 0.1 to 3 μm (col. 9 lines 33-35).

However, Sasaki et al. fail to teach the reflector with feature in claims 17.

Hayashi et al. teach (Fig. 4) the reflector with feature in claim 17 for reflecting light incident thereon toward particular direction due to image viewing from an angle at which the reflection of the external light is avoided (col. 1 lines 47-50).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a reflection type liquid crystal display device as Sasaki et al. with the reflector with feature in claim 17 for reflecting light incident thereon toward particular direction due to image viewing from an angle at which the reflection of the external light is avoided as taught by **Hayashi et al.** (col. 1 lines 47-50).

6. Claims 17, 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. (US6130736A) in view of **Yamanaka et al. (US6452653B1)**.

In regard to claim 21, Sasaki et al. teach (Figs. 1 and 4) a liquid crystal display device comprising:

- a pair of substrates 1/2,
- a liquid crystal layer 3 disposed between the substrates,
- the reflector 14 disposed on one of the substrates,
- a transparent intervening layer (a first overcoat layer 17a) disposed on the reflector,
- a color filter layer 16 disposed on the transparent intervening layer,
- a transparent planarization layer (a second overcoat layer 17b) disposed on the color filter layer,
- a transparent electrode (9 made of ITO (indium-tin-oxide)) disposed on the transparent planarization layer,
- an alignment layer (an orientation film 11) disposed between the transparent electrode and the liquid crystal layer.
- a reflector having light reflective concave portions

wherein

Claim 25:

- the depth of the light reflective concave portions is in a range of 0.1 to 3 μm (col. 9 lines 33-35).

However, Sasaki et al. fail to teach the reflector with feature in claims 17.

Yamanaka et al. teach (Fig. 4) the reflector with feature in claim 17 for reflecting light incident thereon toward particular direction due to having superior reflecting properties (col. 3 lines 54-59).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a reflection type liquid crystal display device as Sasaki et al. with the reflector with feature in claim 17 for reflecting light incident thereon toward particular direction due having superior reflecting properties as taught by **Yamanaka et al.** (col. 3 lines 54-59).

7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuda et al. (US6097458A) as applied to claims 17-18 above in view of Hayashi et al. (US6166793A).

Tsuda et al. fail to disclose forming the light reflective concave portions, wherein the maximum inclination angle is in a range of 4° to 35°.

Hayashi et al. teach forming the light reflective concave portions, wherein the maximum inclination angle is in a part of the range of 5-45° covering 4° to 35° (abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a reflection type liquid crystal display device as Tsuda et al. with the reflector having the maximum inclination angle is in a range of 4° to 35° for exhibiting a bright image and an excellent visibility of image as Hayashi taught (abstract).

8. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Yamanaka et al. (US6452653B1)** as applied to claims 17-18 above in view of Hayashi et al. (US6166793A).

Yamanaka et al. fail to disclose forming the light reflective concave portions, wherein the maximum inclination angle is in a range of 4° to 35°.

Hayashi et al. teach forming the light reflective concave portions, wherein the maximum inclination angle is in a part of the range of 5-45° covering 4° to 35° (abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a reflection type liquid crystal display device as **Yamanaka et al. disclosed** with the reflector having the maximum inclination angle is in a range of 4° to 35° for exhibiting a bright image and an excellent visibility of image as Hayashi taught (abstract).

9. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuda et al. (US6097458A) as applied to claims 17-18 above in view of Masaaki (JP11-348117).

Tsuda et al. fail to disclose forming each of the concave portions are formed by a pressing process using an indenter, the shape of each inner surface of each concave portion being defined by the shape of an end portion of the indenter.

Masaaki teach forming each of the concave portions are formed by a pressing process using an indenter, the shape of each inner surface of each concave portion being defined by the shape of an end portion of the indenter.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a reflection type liquid crystal display device as Tsuda et al. disclosed with each of the concave portions are formed by a pressing process using an indenter, the shape of each inner surface of each concave portion being defined by the shape of an end portion of the indenter for easily and promptly manufacturing non-collapsed concave as Masaaki taught (in Effect of the Invention, see English translation of reference).

10. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Hayashi et al. (US6204903B1)** as applied to claims 17-18 above in view of Masaaki (JP11-348117).

Hayashi et al. fail to disclose forming each of the concave portions are formed by a pressing process using an indenter, the shape of each inner surface of each concave portion being defined by the shape of an end portion of the indenter.

Masaaki teach forming each of the concave portions are formed by a pressing process using an indenter, the shape of each inner surface of each concave portion being defined by the shape of an end portion of the indenter.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a reflection type liquid crystal display device as **Hayashi et al.** disclosed with each of the concave portions are formed by a pressing process using an indenter, the shape of each inner surface of each concave portion being defined by the shape of an end portion of the indenter for easily and promptly manufacturing non-collapsed concave as Masaaki taught (in Effect of the Invention, see English translation of reference).

11. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Yamanaka et al. (US6452653B1)** as applied to claims 17-18 above in view of Masaaki (JP11-348117).

Yamanaka et al. fail to disclose forming each of the concave portions are formed by a pressing process using an indenter, the shape of each inner surface of each concave portion being defined by the shape of an end portion of the indenter.

Masaaki teach forming each of the concave portions are formed by a pressing process using an indenter, the shape of each inner surface of each concave portion being defined by the shape of an end portion of the indenter.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a reflection type liquid crystal display device as **Yamanaka et al.** disclosed with each of the concave portions are formed by a pressing process using an indenter, the shape of each inner surface of each concave portion being defined by the shape of an end portion of the indenter for easily and promptly manufacturing non-collapsed concave as Masaaki taught (in Effect of the Invention, see English translation of reference).

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571) 272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOAN C. NGUYEN
Examiner
Art Unit 2871

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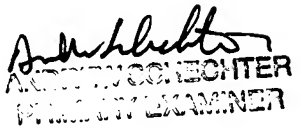

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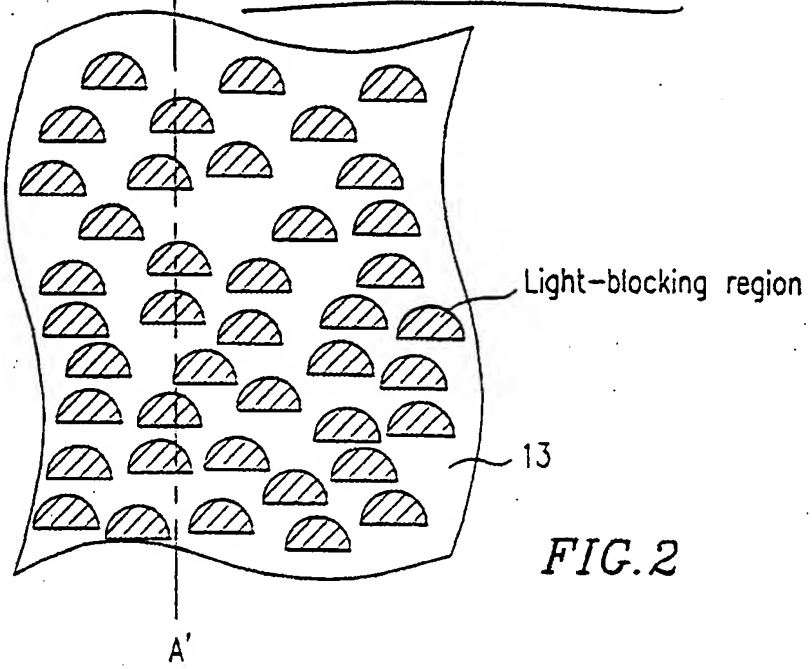

FIG. 2

FIG. 4